

I suggest a balanced approach. Acquisition of comparative behavioral data on motions and programs is certainly to be encouraged; information of this sort is uncommon for Trichoptera at the present time, and is not easily assembled. By contrast, the products of construction behavior are readily accessible in Trichoptera. If, in due course, the two data bases should prove to be in conflict, there will be another issue to resolve. But if the two data bases derived from behavior should prove to be concordant, we could rejoice in the discovery of another source of congruence – which is the real foundation of phylogenetic reconstruction and of classification.

Furthermore, the products of construction behavior by caddis larvae connect directly to an outstanding palaeontological record reaching back in time for some 175 million years (e.g. SUKATCHEVA 1991). These constructs show a high level of congruence with morphological characters in supporting two of the major evolutionary lineages of Trichoptera – Annulipalpia (s.s.) and Integripalpia (s.s.) (e.g. FRANIA and WIGGINS 1997). Indeed, it would be a prediction from this broad congruence of phylogenetic information that behavior assessed from motions and programs would reveal patterns congruent with the lineages of Integripalpia (s.s.) and Annulipalpia (s.s.). But if it turns out that the two aspects of behavior really do lead to different interpretations, the only way to connect behavior based on motions and programs with the palaeontological record is to try to understand its relationship in living animals with the products of larval construction behavior.

References

- FRANIA, H.E., WIGGINS, G.B., 1997, Analysis of morphological and behavioural evidence for the phylogeny and higher classification of Trichoptera. – Royal Ontario Museum, Life Sciences Contributions 160.
- GALL, W.K., 1997, Biogeographic and ecologic relationships in the Plenitentoria (Trichoptera). – Proc. 8th Int. Symp. on Trichoptera 1995:109-116.
- HANSELL, M.H., 1984, Animal Architecture and Building Behaviour. London and New York, Longman, 324 pp.
- MALICKY, H., 2000, Which caddis larvae construct a new case for pupation? – Braueria 27:19-20.
- MOLLES, M.C., NISLOW, K.H., 1991, Geographic variation in the structure of caddisfly cases: clues to the influences of competition and predation. – Proc. 6th Int. Symp. on Trichoptera 1989:177-180.
- SUKATCHEVA, I.D., 1991, Historical development of the order Trichoptera. – Proc. 6th Int. Symp. on Trichoptera 1989:441-445.
- WENZEL, J.W., 1992, Behavioral homology and phylogeny. – Annu. Rev. Ecol. Syst. 23:361-381.
- WIGGINS, G.B., 1959, A new family of Trichoptera from Asia. – Can. Ent. 91:745-757.
- WIGGINS, G.B., 1962, A new subfamily of phryganeid caddisflies from western North America. – Can. Jour. Zool. 40: 879-891.
- WIGGINS, G.B., 1984, Trichoptera – some concepts and questions. – Keynote address, Proc. 4th Int. Symp. on Trichoptera 1983: 1-12.
- WIGGINS, G.B., 1998, The Caddisfly Family Phryganeidae (Trichoptera). Univ. Toronto Press, 457 pp.
- WIGGINS, G.B., GALL, W.K., 1993, The Asian caddisfly family Phryganopsychidae: phylogenetic novelty or relict? – Proc. 7th Int. Symp. on Trichoptera 1992: 149-154.
- ZWICK, P., 1998, *Micrasema longulum* (Trichoptera: Brachycentridae) builds a special pupation chamber. – Annls. Limnol. 34: 437-444.

Author: Dr. Glenn B. Wiggins, Curator Emeritus, Centre for Biodiversity and Conservation Biology, Royal Ontario Museum, 100 Queen's Park, Toronto, Canada M5S 2O6

Reply to WIGGINS by H.MALICKY:

1. WIGGINS has demonstrated in a convincing manner that the larvae of *Yphria californica* and *Phryganopsyche latipennis* construct an entirely new case before pupation, made in a different construction style and of different material, and he concludes that this behaviour is of phylogenetic significance because these two species are phylogenetically significant for other reasons. *Micropterna taurica* (and *Micrasema longulum*) does exactly the same, without intraspecific variation. WIGGINS says now that this may be only adaptive, because limnephilids are not phylogenetically significant for other reasons. If I have correctly understood, this may be an example for a circular conclusion.

2. The study by MOLLES & NISLOW on *Hesperophylax magnus* deals with the cases of the 5th instar larvae only, and has nothing to do with pupal case construction.

3. Concerning the possibility of comparing cases, nets and the like for phylogenetic analysis, they are certainly useful, but the analysis must be made with the behaviour of the animals and not with the results. Similarities in shape, shared by *Ichthyosaurus*, shark, trout and dolphin are analogous, not homologous. I may only repeat what I had said at an earlier occasion to the opinion expressed by WIGGINS (Proc. 6th Int. Symp. Trich.:349): "A coffee cup made of clay may be produced by different methods: turning on a potter's wheel; forming a cylinder with subsequent hollowing out; cutting plates which are bent and stuck together; pouring liquid clay into a mould. The resulting form of the cup will be exactly the same, but the specimens are analogous, not homologous." Obviously the term homology is used in a different meaning by different workers.



Corrigenda to:

Bibliographia Trichopterorum Volume 1, 1996. Pensoft, Sofia/Moscow/St.Petersburg.

It is now about 5 years since publication of vol.1. Several errors in that volume have been brought to my notice, but none in the past 3 years. Hence I list these below, for the benefit of users of the B.T. They will also be listed in volume 2.

Entry 0009, on p. 1, is not Anonymous, but by A.ADLMANSEDER.

Entry 0666, p. 37, should read 'Bulg., bulg., fr.', not 'Russ., russ., fr.'. My apologies to Krassimir Kumanski.

Entry 1283, p. 71. Wang, S. 1963. Volume number is '12(3):55-66', not '3:55-66'.

P. 564, column 3, 2nd entry – '*flavopunctata*, *Dolophilodes*' is out of alphabetical order.

P. 568, column 3, between '*maurus*, *Thya*' and '*mazamae*, *Psychoglyphia*' the alphabetization of entries is scrambled. Also, '*maxima*, *Aethaloptera*' is entered twice, in separate places.

P. 590. The expansion of Schweiz.Z.Hydrobiol. should read 'Hydrobiologie', not 'Hydrologie'.

If other errors are spotted please let me know, for listing in volume 2. My thanks to Krassimir Kumanski, Joe Waringer, and others for spotting these errors.

Andrew P. Nimmo